**Chapter 21**

# THE TRANSPORTATION DISADVANTAGED

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Many people in society have difficulty in using public transportation for reasons that range from emotional to financial. But the largest groups of the transportation disadvantaged are those over 65 and those with a physical or mental handicap. Because the elderly and handicapped are not monolithic groups with identical travel patterns and because their travel needs are still far from clear, national, state, and local efforts to provide them with public transportation services have been less than successful and clouded with controversy. In July 1990, Congress put an end to a long-standing debate over equipping transit vehicles with wheelchair lifts: all public and private transit operators in the United States must now equip all newly purchased vehicles with lifts. It is important to note, however, that during the 20 years over which this debate raged, less than 15% of the elderly and fewer than 1% of the nonelderly handicapped ever used any of the transportation services provided or subsidized by government agencies. Clearly, the accessibility issue has obscured both the larger problem of providing transportation to the majority of the elderly and handicapped who are *not* in wheelchairs and the need for transit systems to provide many other improvements and services for handicapped and elderly travelers, from specially routed buses to travel training programs for the blind and developmentally disabled.

Public policy debates have also tended to ignore the crucial role of other social and economic policies in determining the travel needs of elderly and handicapped citizens. Providing transportation services for both the able-bodied elderly and the handicapped of all ages poses a difficult challenge not just to transit operators and transportation planners, but to land-use, housing, medical, and social planners. Communities will have to develop a number of options, including both transportation and nontransportation responses, to meet the diverse needs of the growing number of elderly and handicapped travelers.

This chapter discusses these issues in four major sections. The first examines the characteristics of the elderly and the handicapped and considers the implications of changing demographic patterns on their travel needs. The second section focuses on federal programs and policies that directly or indirectly provide transportation services to elderly and handicapped travelers. The third section examines the cost and operational characteristics of services designed for disabled or elderly citizens. The last section examines ways that society can be more responsive to the transportation needs of the growing number of elderly and disabled citizens living in suburban and rural places.

## DEMOGRAPHY

The two major subsections that follow treat demographic trends among the elderly and disabled separately. The first subsection focuses on the largely able-bodied elderly, those who suffer from no major handicapping condition or disability, who could use traditional transit services with little or no system modification. The second subsection focuses on the disabled, including the elderly, whose handicaps might limit their use of traditional transit.

### THE ELDERLY

In 1986 approximately 11% of the U.S. population, or over 25 million Americans, were 65 or older. The U.S. Bureau of the Census estimates that between 1985 and 2010 the elderly population will increase 77%, compared to a 32% increase for the population as a whole; the population over 75 years old is expected to more than double in the same period. Such massive changes will cause the median age of the entire society to increase by a decade, from 29.6 years in 1990 to just under 40 years by 2010.

The majority of the elderly do not have significant disabilities but even those who are not handicapped may face problems in using public transportation. For example, the poor elderly require reduced fares; others need help in determining appropriate routes and schedules. Other elderly have heightened security and safety concerns that transit operators must address. Still other older people, while able to board traditional coaches, require additional time to do so or cannot ride standing. Moreover, even the able-bodied elderly occasionally need specialized transportation services—at night or in bad weather—even if they can generally use conventional transit or drive themselves.

#### Can We Determine the Mobility Losses of the Elderly?

Two major questions still face society, although planners have been discussing the transportation problems of the elderly for decades. First, we have not resolved how

much the elderly, who travel significantly less than younger travelers, are foregoing trip making because of their age or because they lack travel options. Second, we do not know the severity of the mobility loss caused by declining driving skills among those who continue to drive.

To begin, the data are clear; those currently elderly travel fewer miles and make fewer trips than those under 65. Figure 21-1 shows that differences are greatest among women under and over 65. Older women make almost 50% fewer trips per capita than younger women, traveling 59% fewer miles. Men over 65 make 25% fewer trips per capita than men between 36 and 65, traveling 56% fewer miles.

Unfortunately, we cannot assume that all or even a significant part of the travel differences between those under and over 65 is due to limited or expensive transportation options or declining transit or driving skills. Observed travel differences may result from diverse preferences for activities outside the home, variations in the ability to pay for the activities themselves, or predictable changes in life-style. For example, a major difference in the number of trips made by those over and under 65 is the work trip missing from the pattern of older travelers.

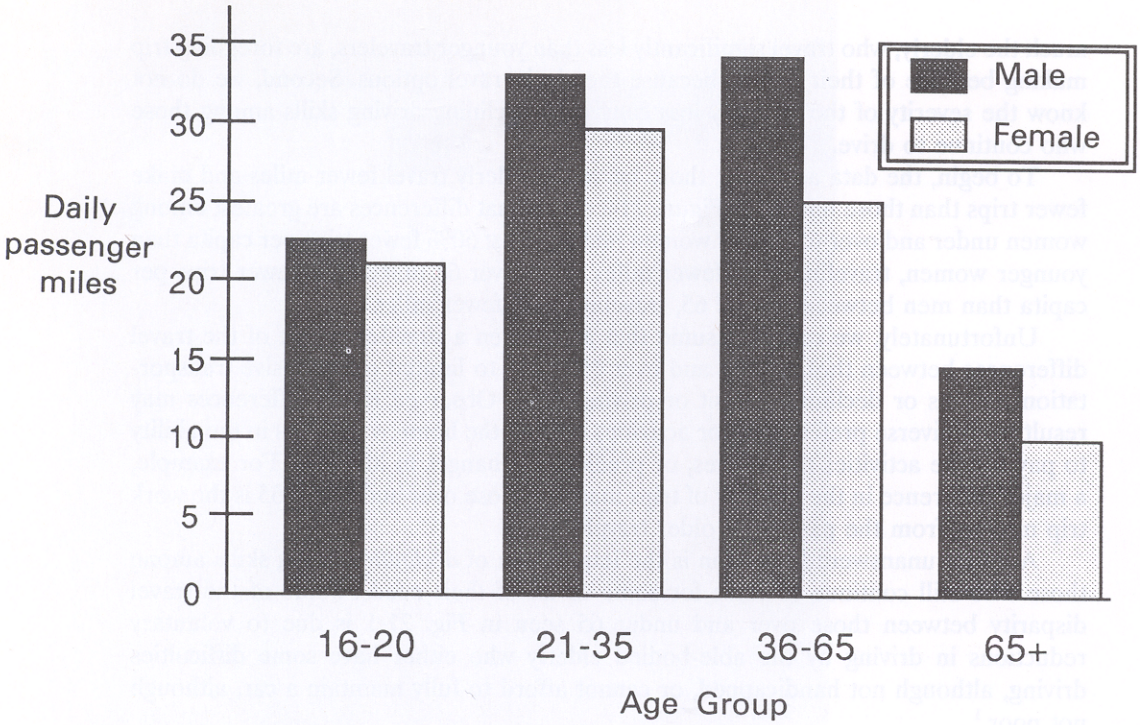
Another unanswered question is the implication of *declining* driving skills among those who still continue to drive for some or all of their needs. Some of the travel disparity between those over and under 65 seen in Fig. 21-1 is due to voluntary reductions in driving by the able-bodied elderly who either have some difficulties driving, although not handicapped, or cannot afford to fully maintain a car, although not poor.1

These patterns can be seen clearly in travel data. First, studies show that the elderly significantly reduce driving to avoid high-risk situations: peak-period traffic, nighttime, and poor weather.2 This avoidance behavior, which begins at 60, largely explains why elderly drivers have far lower per capita accident rates than younger drivers, although they have higher per-exposure rates.3, 4, 5 Unfortunately, the mobility implications of these self-limitations are not always recognized since not all trips can be moved from night or peak period to midday, nor from bad weather to good.

Second, many studies show that the elderly hold on to their licenses and cars as long as possible because they associate significantly higher independence and well-being with remaining car drivers6,7 (A Dutch study found that the elderly with driver's licenses *never* sold their cars regardless of age or disability.)8 Gonda notes that "Driving may be one of the few areas in an older person's life where they can still ‘call their own shots'" especially when other supports have been lost.9

**Can We Meet the Needs of the "Modern" Elderly?**

A number of drastic demographic changes have combined to make it difficult to provide transportation to the elderly suffering mobility losses for any reason. Table 21-1 shows how the distribution of the elderly in the United States has changed since 1970, not because the elderly have moved to the suburbs but because the entire U.S. population is aging in place.10,11 In 1970 the largest number of the elderly not only lived



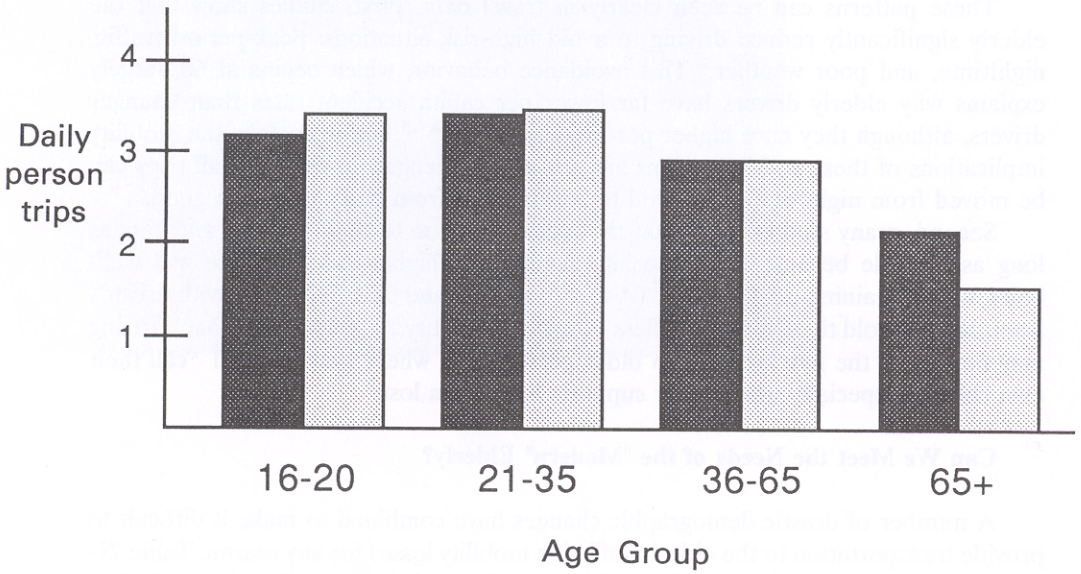




**Figure 21-1** *Daily passenger-miles and daily person-trips by age and sex.*
Source: Calculated from Tables 28 and 29, U.S. Department of Transportation, 1983–1984 NPTS: Survey Data Tabulations, pp. 49, 51.

in urban areas, they lived in the central cities of those urban areas. But by 1980 the urban population balance had changed remarkably, with the largest number of elderly residing in the suburbs.

**TABLE 21-1**

**Distribution of the Elderly by Location**

| | 1970 | 1980 | 2000 Projectionsa |
|---|---|---|---|
| Urban | 72.7% | 71.4% | 65.8% |
| Central City | 60.4% | 42.7% | 36.4% |
| Suburbb | 36.6% | 57.3% | 63.6% |
| Rural | 27.3% | 28.6% | 34.2% |

aAssuming 1970-1980 rate of change in residential location.
bIn 1970, "urban fringe" = suburb; in 1980, in the urbanized area, but not in the central city = suburb.

Source: Derived from 1970 and 1980 data in the U.S. Census of Population, General Social and Economic Characteristics, U.S. Summary. 2000 total population projections from U.S. Census, Series P-25, No. 952.

If current trends were to continue to 2000, as Table 21-1 shows, almost two-thirds of all elderly urban dwellers will live in the suburbs. Just as significantly, rural areas will be the home of a growing concentration of elderly citizens whose travel patterns will be severely circumscribed. In short, by the end of the 1990s, if present patterns persist, over 75% of the entire elderly population will be living in low-density suburban or rural places that are extremely difficult to serve with traditional transit.12,13

Table 21-2 shows the other major demographic change that creates special problems for transit operators: most elderly drive and most are not transit users. Table 21-2, which reports on data from a special survey undertaken by the National Center for Health Statistics in 1977, shows that well over half of the elderly drive, with over two-thirds of the younger elderly doing so. These findings are consistent with 1983 Nationwide Personal Transportation Study (NPTS) data, which show that over 80% of the trips of the elderly are taken in a car, regardless of where they live or whether they drive.

Table 21-2 also demonstrates the other side of the coin: over half of the elderly are not transit users. Transit ridership is highest among the oldest of the elderly, not because, as planners have traditionally assumed,14 they begin to use transit as they age. Rather the oldest citizens are traditional transit users from the past, while the younger elderly are not. Data from the 1983 NPTS show that transit ridership has been dropping among those over 65 since 1977 as more younger, nontransit users join the growing group of seniors.15

Table 21-2 also suggests how difficult it may be for transportation planners to respond to the needs of elderly travelers in traditional ways or by marginal changes in

*TABLE 21-2*

**Transit and Auto Use by Elderly Travelers**

| Age | Drivers | Transit Users | Transit Use Prevented from Using Transit by Health or Disability |
|---|---|---|---|
| 60 plus | 60.5% | 43.4% | 5.1% |
| 60 -69 | 71.9% | 39.7% | 2..4% |
| 70-79 | 54.0% | 45.6% | 6.2% |
| 80 plus | 25.6% | 54.4% | 17/8% |

Source: Calculated by author from unpublished data from the 1977 Special National Health Interview Survey, U.S. National Center for Health Statistics.

traditional services. Few of the elderly explain their failure to use transit in terms of their health problems or disability, issues which transit systems might address through vehicle or system modifications. Rather, the elderly do not use traditional transit because it is not responsive to their needs.16,*17* A study for the National Research Council (NRC), recognizing that the majority of the *urban* elderly lived in suburban communities, concluded that declining transit use among the elderly was the function of major environmental and land-use barriers to both travel and transit use.

The NRC study showed that the problem was not simply lack of transit service (which could be addressed, presumably, by adding additional traditional services), but by the inherent inability of traditional services to serve the far-flung travel patterns of the largely suburban elderly. The NRC study calculated that fewer than half of all trips currently made by the elderly in a car in the United States could be made using almost perfect transit in under one-half hour (that is, assuming affordable, accessible buses routed within two blocks of all origins and destinations, with frequent headways and continuous service availability).18 Obviously, few cities provide such services, nor could they with even major budget increases.

A 1989 study using actual data showed that, although current service coverage was often poor in suburban areas, improving traditional fixed-route services to near perfect conditions did not bring major mobility gains to most elderly. The study first matched *actual* origins and destinations in six cities to *actual* transit system schedules and routes and found that an average of 50% of the suburban elderly in the six cities simply had no conventional transit available at all. Even among the half of the elderly population who did have access to current services, a large percentage of actual trips could not be made by transit in under one hour.19 But as the NRC findings suggest, simply improving service coverage did not improve the situation for most citizens because suburban trips were so long and varied; when the study assumed ubiquitous transit services (matched to actual origins and destinations), it found that between 30% and 60% of the suburban elderly could not make desired one-way trips in under 30 min

even with almost perfect service!20 Thus, even if transit systems had the funds to dramatically increase route coverage and service schedules, they would meet only some of the needs of some of the elderly.

## THE DISABLED

In 1988 the National Institute on Disability and Rehabilitation Research reported that roughly 5% of young people under 17 and 14% of those 16 to 64 had one or more conditions, illnesses, or diseases that limited them in some way in the conduct of their activities. The number of elderly with some activity limitations was much higher: roughly 40% of those over 65 had some form of limitation.21 All studies show that disabled people make far fewer trips per capita than comparable nondisabled people, but, as with the elderly, the causes of these travel differences and the role played by inadequate transportation services are far from clear.

### How Many Handicapped Travelers Are There?

Early estimates calculated that from 5 to 14% of the U.S. population, or between 7 million and 26 million Americans, had impairments that would create transportation barriers, including between 30 and 55% of the elderly.22 None of the estimates clearly included the 6.5 million Americans with developmental disabilities (unless they also had sharply defined physical handicaps as well).23

These estimates were based on a combination of number-crunching and guesswork. Many early studies simply identified the extent of handicapping conditions in the population and then inferred or estimated how these conditions would affect travel behavior and needs. Unfortunately, research later found that many people with significant disabilities actually used transit or reported that they could use transit if they desired. A major Congressional Budget Office study, for example, using unpublished data from the National Center for Health Statistics, found that only 41% of the 3.7 million Americans who used a wheelchair, walker, or cane reported needing assistance to use transit.24

In 1977 the Urban Mass Transportation Administration (UMTA) undertook a major study, conducted by Grey Advertising, to identify the number of people with *functional* problems in using public transit. Rather than counting or cataloging physical or mental problems, the study attempted to evaluate which infirmities and conditions would actually prevent people from traveling to or getting on a transit vehicle or riding in that vehicle. The UMTA survey of transportation handicapped people concluded that roughly 5% of the U.S. population over the age of 5, or 7.4 million Americans, had a physical handicap that interfered with or prevented their use of public transit. Again, the developmentally disabled were not clearly included in that estimate.

### What's the Relationship Between Disability and Transit Problems?

To this date, the best information we have on the actual relationship between disability and transit use comes from two old and controversial sources: the first is the

transit disability question asked on the 1980 census (but not reasked in the 1990 census); the second is the 1977 Special Survey of the population taken with the 1977 National Health Institute Survey (NHIS).

*The 1980 census.* During the 1980 census, the U.S. Bureau of the Census asked a 19% sample of all noninstitutionalized Americans to answer the following three-part question:

Do you have a physical, mental, or other health condition which has lasted for 6 or more months and which a) limits the kind or amount of work you can do at a job, b) prevents you from working at a job, or c) prevents you from using public transit? 25

This particular question and the information it generated have been severely criticized. The Census Bureau did not want to include it at all after pretests showed that (1) two-thirds of the respondents gave totally different answers to this same question in two separate applications and (2) many clearly handicapped people did not respond appropriately to the question.26 The question was included partially in response to pressure from advocacy groups and partially because the demand for location-specific data on the handicapped was so great.27 Recent analyses suggest, however, that the census data are far more reliable than originally thought28 and they coincide very well with other data sources, as shown below.

Table 21-3 shows that in 1985 about 3.5 million elderly reported a transit disability, or roughly 15% of all older Americans; about 8.5% of traditional working age (16 to 64) Americans reported a work disability, but only 1.8% or 2.6 million Americans reported a transit disability. Almost all younger people who reported a transit disability also reported a work disability. Transit disabilities were far more likely to be reported by women, the very old (over 80), those living alone, blacks, and those with low incomes.29

The census data also show that, although the single largest block of those with either work or transit disabilities lived in the central cities of American metropolitan areas, the overwhelming majority of both the elderly and those under 65 with disabilities lived in low-density places. While roughly one-third of the handicapped in both population groups lived in central cities, almost two-thirds of all Americans with disabilities did not. In short, the census shows us similar patterns for both the able-bodied elderly and the handicapped of all ages: they are currently concentrated in suburban and rural areas that traditional transit, whether or not accessible, is unable to effectively serve.

*The Special National Health Institute Survey.* In 1977 the National Center for Health Statistics undertook a special survey of the auto and transit use of Americans with and without activity limitations. The relatively small incidence of transit disability found by the census is also seen in the NHIS data; as Fig. 21-2 suggests, roughly 4% of the U.S. population over 20 reported that a physical handicap interfered with their use of public transit. Approximately 1.6% of those age 20 to 59 and 12.5% of those over 60 reported a public transit disability; this tracks remarkably well with census data.

**TABLE 21-3**
**Disabled Living in Various Locations**

| | Elderly (as a % of all elderly) | | Persons Aged 16-64 (as a % of total 16-64 population) | |
|---|---|---|---|---|
| | With Transit disability | With work disability | With transit disability | With both transitanddisability |
| Central city | 16.4% | 9.0% | 2.2% | 2.0% |
| Suburba | 14.3% | 7.0% | 1.5% | 1.3% |
| Small townsb | 13.6% | 9.6% | 1.7% | 1.6% |
| Rural | 14.3% | 9.6$ | 1.8% | 1.7% |
| Total U.S. | 14.9% | 8.5% | 1.8% | 1.7% |
| Total number | 3,588,536 | 12,320,912 | 2,597,631 | 2,393,482 |

aSuburban = urban fringe. bSmall towns = places of 2500-10,000 plus places 10,000+ (not urbanized).
Source: Derived from Table 106, U.S. Census, General Social and Economic Characteristics, PC80-1-CL, 1-77.

Several other trends found in the NHIS data are shown in Table 21-4. First, although the majority of both those over and under 60 did not use transit, very few people of any age reported that their disability or the requirement for assistance prevented them from dthem doing so. No more than 2% of the entire population had problems that required transit assistance. Even those with the most severe disabilities rarely reported transit problems; less than 15% of the severely disabled elderly and just under 10% of those 20 to 59—with the most severe disability—said that their handicap or the need for assistance explained their lack of transit ridership.

Table 21-4 also suggests why physical handicaps explain so little of the failure to use transit; most disabled people drove their own cars. Clearly, auto use either overcomes more physical barriers than does transit or it is simply more responsive to the environmental and land-use barriers facing the disabled elderly and nonelderly living in suburban and rural places.

## Do the Disabled Need Additional Trip Making?

Like the able-bodied elderly, the handicapped as a group make fewer trips per capita than comparable nondisabled people. But do the differences reflect a loss of mobility, and, if so, what is the magnitude of that loss? A number of methods have been used to quantify the trips lost by the handicapped who cannot use traditional transit or have trouble driving. The most straightforward method is to ask handicapped

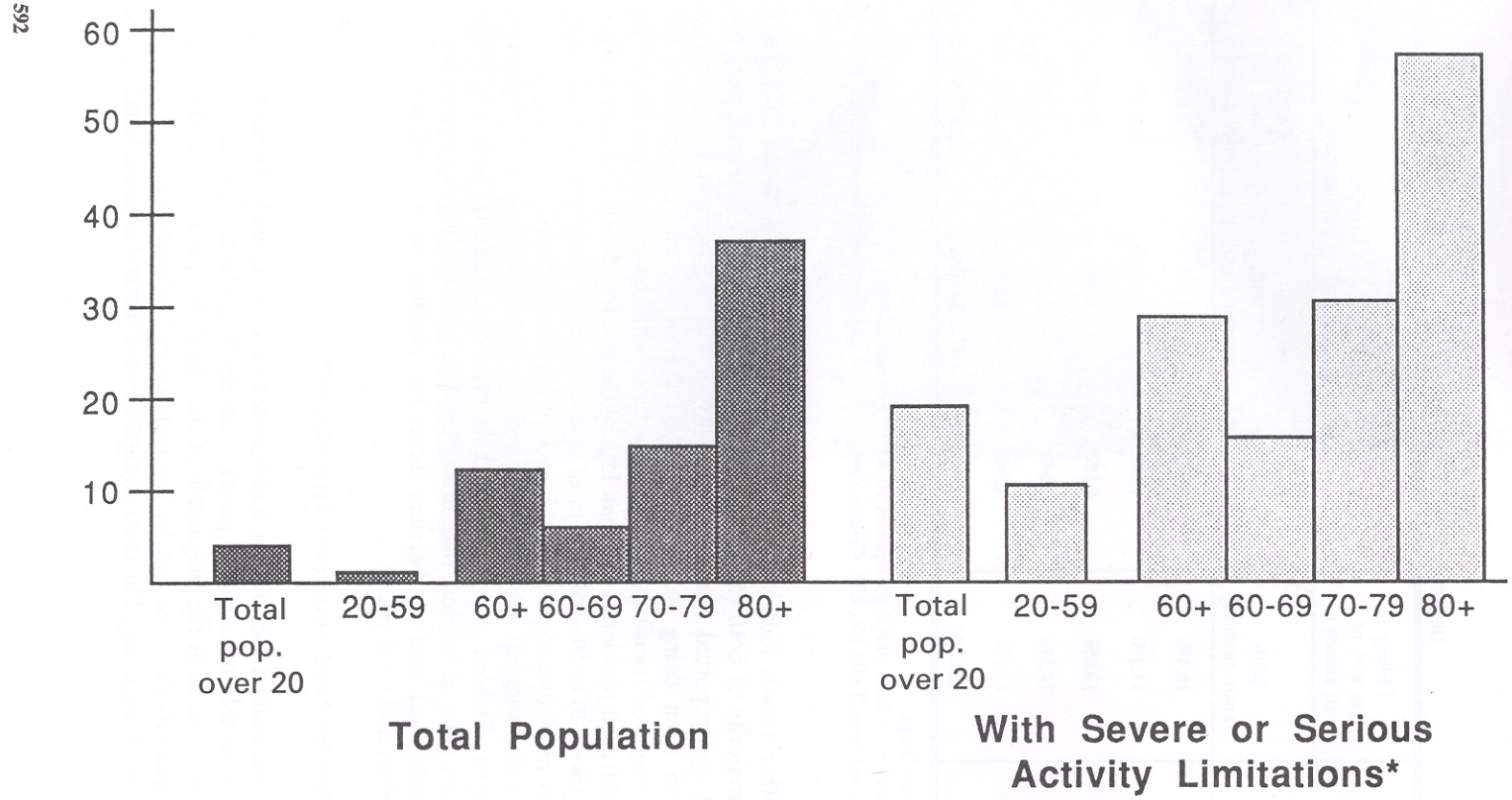



**Figure 21-2** *Percentage of the population who have a transit handicap by age and activity limitation.* * Severe or serious activity limitation is defined as those who are limited in the amount or kind of their major activity or unable to carry out their major activity. [Source: Calculated by the author from unpublished data from the tapes of 1977 Special NHIS Survey.

TABLE 21-4
**Transportation Use and Activity Limitation**

| Transportation Use | Total Pop. over 20 | Activity Limitation: Unable to carry out major activitya 20-59 | Unable to carry out major activitya 60+ | Limited in amount or kind of major activity 20-59 | Limited in amount or kind of major activity 60+ | Linmited in nonmajor Activity 20-59 | Linmited in nonmajor Activity 60+ |
|---|---|---|---|---|---|---|---|
| No transit use | 63.9% | 56.9% | 50.8% | 63.5% | 54.8% | 61.2% | 56.2% |
| Would need help to use | 1.6% | 9.6% | 14.3% | 2.2% | 9.6% | 1.1% | 6.7% |
| Uses transit | 36.1% | 43.2% | 49.2% | 36.5% | 45.2% | 38.8% | 43.9% |
| But needs help to us | 8.5% | 41.0% | 58.0% | 12.6% | 36.1% | 5.6% | 24.4% |
| Drives a car | 82.8% | 62.3% | 49.0% | 77.9% | 48.8% | 86.5% | 54.1% |
| But unable | 1.9% | 23.0% | 11.1% | 28.3% | 10.5% | 27.6% | 6.0% |

aMajor activity varies with the age of the respondent.
Source: Unpublished data from the tapes of the 1977 Special Survey, NHIS.

or elderly travelers or their advocates whether they have mobility losses. But this approach has serious problems in practice, although it still has widespread popular appeal. First, advocates are far more likely to attribute transportation problems to these citizens than are the handicapped themselves—whom should we believe?30 Second, the elderly and handicapped may be so constrained by their existing lack of transportation that they cannot conceive of an improvement in their situation; in many studies handicapped respondents reported *no unmet needs,* while others reported the desire for more travel without being able to give examples of where they wanted to go or how frequently.31 Because of the uncertainty this approach created, it has been largely discredited as an analytical tool32 unless used in conjunction with other more systematic approaches.

A more quantitative, but no more satisfactory, approach to understanding the magnitude of the mobility losses of the handicapped is often called *gap analysis.* This method simply measures differences in trip rates between those with and without disabilities (or those over and under 65). Nonworkers, however, make fewer trips than those in the paid labor force, and the physical or financial difficulties faced by the handicapped might lower their ability or desire to take part in out-of-home activities. These facts require analysts to separate trips voluntarily given up from those involuntarily foregone by the elderly or disabled, which, of course, is exactly the question the analysis begins with.33

A third approach has been to estimate *latent demand* or the desire for additional

travel created or released among the handicapped when they are actually offered accessible or affordable transportation services. This method measures the *before* and *after* travel patterns of the handicapped supplied with new transportation options. Unfortunately, using this method indicates that there is very little latent demand or lost mobility among the handicapped; very few handicapped or elderly people use alternative services. Among those who do use either accessible or special services, many are simply changing from their existing travel mode for a trip they are already making to the subsidized or special service. Several detailed analyses have failed to find evidence of new trip making, representing latent demand or previously unmet transportation needs, among those offered special services.34,35

Not surprisingly, there has been controversy over the low level of latent demand found by these studies. First, since existing alternatives are very limited, they may not be a good test of what the handicapped would do if provided with reasonably high quality special transportation or accessible fixed-route services. Second, these findings do not square with more qualitative assessments of the travel problems of the handicapped. For example, a 1989 study done for the U.S. Department of Transportation conducted comprehensive interviews with six disabled travelers who did not own a car. The study found that, when special service became available, each of the travelers both mode-shifted trips from an existing option to the special service *and* made new trips. However, new trips outnumbered shifted trips by over three to one. In fact, as a group, the handicapped respondents increased their trip making over 56% because of their use of special transit services.36

A third complaint about latent demand analyses is that environmental or nonsystem barriers to transit use by the handicapped may explain as much of the inability or unwillingness to travel as does the lack of travel options. The use of fixed-route service may be limited by the inaccessibility of the city, its streets and buildings, whether caused by design, maintenance, or climatic problems. The use of special services may be constrained by service and scheduling restrictions. Unfortunately, this complaint requires the analyst to estimate the number of trips involuntarily given up by the handicapped because of environmental and infrastructure barriers, which is, again, the question the analyst began with.

In summary, we still do not know the extent of unmet travel demand generated by the handicapped nor how much of it could be met by unconstrained special services or fully accessible bus systems. We do not understand if the handicapped do not travel more frequently because they simply don't want to, or because available transportation options do not meet their needs, or because other environmental barriers must first be overcome.

# POLICIES AND LAWS TO MEET NEEDS OF THE ELDERLY AND HANDICAPPED

## OVERVIEW OF DOT AND DHHS ROLES

Two U.S. cabinet-level departments have significant responsibility for financing or providing transportation services to the elderly and handicapped: the U.S. Department of Transportation (DOT) and the U.S. Department of Health and Human Services (DHHS). Each of these departments has constituent units that deal with various aspects of transportation service delivery; the major DOT agency charged with responsibility for elderly and handicapped services is the Urban Mass Transportation Administration (UMTA). While there are over two dozen constituent agencies within the DHHS with responsibilities for these citizens, the most notable is the Administration on Aging (AOA).

UMTA and the local transit systems it helps to fund have substantial obligations to the elderly and handicapped. Ironically, they spend far less and provide far fewer direct services to these citizens than do the constituent agencies in the DHHS. Although most congressional mandates to serve the elderly and handicapped have focused on DOT, UMTA actually has only one program designed specifically for the elderly and handicapped. Conversely, the agencies of the DHHS have a multitude of programs designed specifically to provide transportation services to various elderly and handicapped citizens in a wide variety of ways.

## OBLIGATIONS OF DOT

DOT's role in serving the elderly and handicapped has developed not from programs directed at these citizens but from congressional mandates about how local transit systems receiving federal aid are to behave. UMTA has three programs that provide financial assistance to local transit operators to help meet their operating deficits and to buy capital equipment. None of these programs is focused on the needs of elderly or disabled citizens. UMTA/DOT has only one relevant program, Section 16(b)2 of the Urban Mass Transportation Act of 1964, as amended, which provides capital equipment to private nonprofit agencies serving disabled or elderly citizens. The UMTA Section 18 program is designed to provide operating and capital assistance to rural transit operators, although the ridership of rural systems is composed largely of elderly citizens. Unfortunately, Congress has not always been clear or consistent about the obligations of transit systems receiving funds from these programs; for example, some requirements apply to both elderly and handicapped citizens, while others apply only to those with handicaps.37

Congress has attached requirements to all these programs for years, although the earliest ones were relatively minor. In 1970 the Biaggi Amendments to the Urban Mass Transportation Act of 1964 first spoke to the need for transit systems to pay special attention to the distinctive requirements of the elderly and handicapped. The act

required federally aided transit systems to make "special efforts" for the elderly and handicapped, including both involving them in planning efforts and providing special services. Six years later, in April 1976, UMTA first issued regulations specifying what transit systems were actually required to do to pursue these special efforts. Although the 1976 regulations provided only guidelines on what constituted an acceptable special service, the most widely accepted definition of compliance was that transit operators must spend on special services an amount equal to 5% of the federal funds received under the major operating assistance programs. Transit systems could also achieve compliance by equipping 50% of their bus fleet with wheelchair lifts instead of providing specia1 services.

There was a range of local responses to the special efforts requirements.

A wide vanety of special services models were adopted at the local level. Some transit systems provided specialized demand responsive paratransit senvices in system owned vehicles, some gave eligible citizens coupons or pre-paid taxi rides, others contracted for paratransit senvices with existing social service providers or with profit making firms. The overwhelming number of systems allowed any elderly person to ride although some required the presence of a handicap.38

Some systems chose to put wheelchairs on buses as their preferred response; the first accessible buses in the United States were put into service in 1977 in San Diego and St. Louis in response to these regulations.39 Some cities only provided special or accessible services after handicapped groups successfully sued them in court; many large cities, like New York, delayed initiation of either type of service for over a decade.

On May 31, 1979, UMTA put more definitive restrictions on its grant recipients. In pursuance of its obligations under Section 504 of the Rehabilitation Act of 1973, UMTA issued regulations requiring that all regular transit coaches bought after July 1979 be accessible to the handicapped, including wheelchair users. Rail system vehicle and station modifications were also required. Shortly after the regulations were issued, the American Public Transit Association (APTA), in conjunction with a number of large transit systems, filed suit to prevent the enforcement of the regulations. On May 26, 1981, a federal appeals court found that UMTA had exceeded its authority in requiring wheelchair lifts on buses.

In July 1981 UMTA issued an "interim final rule," which summarized what transit systems were compelled to do under both the special efforts and the 504 requirements. That rule permitted communities to select their own response to the needs of the handicapped, allowing so-called "local option." It did require, however, that communities spend a maximum of 3.5% of their federal operating assistance on their services for the handicapped. In 1982, in response to an ongoing debate between the transit community and advocacy groups about what constituted acceptable local service, Congress amended the Surface Transportation Assistance Act to specifically require that UMTA develop minimum service criteria for local transit systems to follow when choosing among the options available to meet the needs of the handicapped.

Because of the controversy over both the costs and the effectiveness of the

available options, UMTA spent over 5 years developing a final rule that specified specific service criteria that met both the 504 and special efforts mandates. The 1986 "final rule" required that transit operators must spend 3% of their total operating budget in providing either fixed-route accessible buses or demand-responsive service comparable to traditional bus services. There was an escape clause in the final rule, however. If the transit agency could not meet all these service requirements by spending 3% of its total operating budget and was not willing to exceed that maximum cap, the system could negotiate with the disabled community for a reduction in one or more service criteria.

This issue returned to the federal courts in May 1986 when an advocacy group filed suit against DOT. A district court upheld the local option element, ruling that local communities could chose between fixed-route accessible and special transit systems. The court also ruled, however, that the 3% cost cap was arbitrary and capricious. Both UMTA and the advocacy groups were unhappy with this ruling and appealed it. In February 1989 a federal appeals court upheld the district court's ruling overturning the 3% spending cap. To the dismay of the transit industry, however, the appeals court went further, saying that Congress had indeed intended for transit systems to provide *both* special services *and* accessible fixed-route transit.

In July 1990, Congress made clear its agreement with the court's opinion of its intention; it overwhelmingly passed the Americans with Disabilities Act (ADA). That act requires all transportation providers, both public and private, to equip all new vehicles with wheelchair lifts *and* to provide special services for those unable to use accessible fixed-route services. There is an escape clause, however, that will probably be the focus of further litigation: transit systems are allowed to reduce special services, but not accessible traditional transit, if they can prove "undue financial burden."

Transit operators are understandably unhappy with the requirements of the ADA. It is likely that they will try to prove that these requirements cause undue financial burden, allowing them to reduce their special service offerings. So, while all transit systems will be partially or fully accessible in the near future, the majority of handicapped people will face severely restricted travel options as transit systems cut back on specia1 services.

## SOCIAL SERVICE PROGRAMS

Between 1960 and 1980 the number of federal (and state) programs providing transportation services for a wide group of transportation handicapped clients grew exponentially. The majority of the federal programs were housed in the U.S. Department of Health and Human Services (DHHS), although there were relevant programs in the Departments of Agriculture, Labor, Education, and Housing and Urban Development, as well as the Veterans Administration. In 1977 the U.S. General Accounting Office estimated that 114 separate federal programs expended money on transportation services for the disadvantaged and elderly, over half of which were located in the DHHS. The impact of so many funding programs was staggering: a study by the Administration on Aging (AOA) found that the number of transportation

systems that it sponsored grew from 1000 to 3200 between 1974 and 1980, or over 300%!40 A 1989 study identified 31 major programs in the DHHS alone (each with subcomponent programs) that funded transportation services at the local level.

Because program structures at the state and local level are so complex, it is not possible to determine how much money is actually being spent for transportation services for the elderly or handicapped through these agencies and programs!41 In 1985 a DHHS administrator estimated that the department spent $800 million on transportation services alone,42 or roughly eight times the combined 1989—1990 expenditures of DOT's 16(b)2 and Section 18 programs. This figure, however, is probably low since a 1980 study for the AOA concluded that between $500 and $800 million was spent for transportation services for the elderly under Title III of the Older Americans Act alone.43

This tangle of providers created both financial and service problems. Most services had very narrow target groups, so it was difficult for people to know what services they were eligible for, and redundancy and inefficiency grew remarkably. Individual services rarely coordinated any aspect of their service delivery with one another, and they had little interaction with public transit systems. As a joint report of the U.S. Departments of Transportation and Health and Human Services noted:

Transportation services to social service recipients were rather haphazard. Persons transported to an appointment could be dropped off, but not picked up. "Breakdown maintenance" was the rule as transit vehicles were run until they could run no more. Some client groups were left unserved, while others had more service than they needed. "Turf" battles among providers and eligibility disputes were common, and funding was uncertain. It was only a matter of time before Congress would be challenged to bring order out of what had been chaos.44

## COORDINATION OF FEDERAL EFFORTS

The lack of coordination and the overlap and duplication seen in many of the social service systems continued to proliferate with the creation of new federal programs. There were limited federal efforts to increase coordination in the spending of these funds at the local level; for example, the 1978 Amendments to the Older Americans Act mandated that all services delivered to the elderly, including transportation, be provided in a coordinated and comprehensive manner, although there were no guidelines and no sanctions. Moreover, the AOA amendments spoke only to programs funded through the act and not to coordination with local transit systems or other social agencies.

In 1986, the secretaries of the U.S. Departments of Transportation and Health and Human Services signed an Interagency Agreement for the Coordination of Transportation Services funded through the two departments. The agreement established an interagency working group, the DOT/DHHS Transportation Coordinating Council, whose charge was to develop a way to meet the stated goal of the departments to coordinate related programs at the federal level wherever possible and to promote maximum feasible coordination at the state and local levels.

The two departments were interested in a range of potential activities. Coor

dination could include one agency buying or selling transportation services to another; agencies purchasing services from existing community providers, both profit and nonprofit, rather than operating individual systems; agencies sharing one or more service functions, from dispatching to bulk purchase of supplies to joint vehicle maintenance; and agencies sharing the use of vehicles when their periods of demand were different.

The interagency council found little evidence of actual prohibitions against coordination at the local level (with the exception of UMTA 16(b)2 vehicles, which were not to go to public agencies). The council, however, did find problems created by federal regulations. A major coordination problem reported by states to the council was the complexity of the governmental laws, regulations, and administrative demands accompanying the three-dozen programs in DHHS and DOT. Their overlapping requirements created uncertainty, ambiguity, and fear of retroactive denial of funding, all of which worked against coordination at the local level.45

A 1987 study of coordination obstacles in nine major DHHS programs concluded that there were no active barriers to coordination in federal programs, but some fairly significant passive barriers or disincentives to coordination. The study concluded that most federal programs contained active incentives for recipients to buy vehicles and maintain individual, separate services, even where other social service or private systems were available to provide some or all the transportation required by their clients.

The 1987 study of DHHS programs also found that a major barrier to coordination was the failure of local recipients to understand their own cost patterns. Most DHHS agencies (and their state and regional counterparts) do not require local agencies to actually calculate their expenses in providing client transportation. Without such cost data, recipients are unlikely to recognize the financial advantages of coordination or have any basis on which to compare alternative options. For example, of ten states surveyed, only two required local agencies receiving Title III aging program funds to calculate their costs in providing transportation services, and only half required agencies to calculate the cost involved in providing Medicaid transportation. The study concluded that

It is imperative that federal and state level DHHS agencies compel local recipients to actively consider the cost-effectiveness of their current mode of provision, whether contract or not. Mandatory contracting requirements are inadequate because so much competitive contracting in the social service network is artificial; the process is set up to ensure that other social service agencies, or subsidiaries of the primary agency, receive the contract award .... Requiring these agencies to publicly display the real costs of maintaining their turf, and allowing other providers to publicly compare their service costs, could have profound impacts [on coordination].46

## A MAJOR ROLE FOR THE STATE

Overall both the 1987 study of DHHS programs and the interagency council concluded that an active state role, rather than federal action, was required to increase coordination. A 1989 study for the interagency council reported that

> In many cases, the role of State and local government is the key to coordination success .... In fact, research confirms that the role of States is so important that barriers to coordination can virtually crumble if there is a commitment at the State level.47

Most coordination success stories do come from states with mandatory coordination requirements. For example, Florida, Iowa, Maine, and North Carolina have programs requiring local recipients to use their transportation funds effectively. Although the programs differ from state to state, in general each state has established one regional coordinator or provider in each substate region. All agencies receiving most types of state or federal funds must either (1) purchase their transportation services through the designated provider or coordinator, (2) pay a rate set by the designated provider or coordinator, or (3) justify their need for additional vehicles. The designated regional agency may itself be a provider, or it may contract with other community providers to provide service to the local agencies mandated to purchase transportation from it, acting like a transportation broker. Or the designated agency may both provide service in its own vehicle fleet and contract with community private for- and not-for-profit providers.

In states with mandatory coordination, in order to provide service directly or to be allowed to receive additional vehicles, a local agency must convince the designated regional agency to certify that no current provider is able or willing to provide the transportation services for which the vehicles are sought. Iowa, for example, has been divided into 16 planning regions, each with one administrative agency that functions as the regional transportation coordinator. Every public or private operator must be certified by its regional coordinator before it can receive any state or federal funds, whether from DOT or the DHHS. Before any agency is given funds to directly provide its own services it must prove that its transportation costs would be lower than those experienced by currently certified regional operators.

There are, of course, coordination success stories that do not involve mandatory state action. In Pittsburgh, for example, over three dozen social service agencies buy transportation services for their clients from the special service provider established by the transit authority. In Portland (Oregon), Lancaster (Pennsylvania), San Francisco, Sacramento, and Seattle, many local social service agencies contract for either individual or group services for their clients from their local transit operator or other social providers.

In spite of these limited coordination successes, a maze of DHHS and DOT programs still fund local transportation efforts. These efforts vary considerably in the kind and quality of services provided, in the clients and trip purposes eligible for service, in system cost and productivity patterns, and in the extent to which the transportation disadvantaged are offered meaningful *choices* that respond to their life-styles and needs. The way in which transportation efforts vary from locality to locality and from one subgroup of the handicapped to another are discussed in the following section.

As the following studies show, special services and accessible transit respond to different user groups, even if unintentionally. The lift features on fixed-route transit vehicles rarely help ambulatory disabled or elderly travelers, and few special service riders are in wheelchairs. Moreover, whoever the target market, few accessible or special services are actually used by many elderly or handicapped travelers.

## ACCESSIBLE FIXED-ROUTE TRANSIT

In 1989 the American Public Transit Association (APTA) reported that 56% of the nation's transit systems met their mandated obligations to the elderly and handicapped with some form of accessible fixed-route service, with about one-third of those (or 18% of all systems) providing only accessible fixed-route services. Although service costs for early lift-equipped vehicles were very high and ridership was generally very low, the current picture is slightly different in some cities.

A 1989 survey undertaken by the Metropolitan Transit Authority (MTA) of Harris County found that, even though wheelchair boardings were still relatively low, they were substantially higher than in the previous decade. In a few cities the costs per boarding, although still high, were close to or less than the costs of specialized transit services. The cities responding to the Houston study had an average of 3108 boardings per month, with Seattle, Denver, and Los Angeles showing over 7000 boardings per month. Not surprisingly these three cities experienced costs under $15 per trip. Other cities, such as Philadelphia and St. Louis, however, reported costs in excess of $700 for each trip by a rider in a wheelchair.

In spite of the very real improvements in costs and ridership experiences, accessible fixed-route transit is obviously still very expensive per rider. The Houston MTA survey found that the additional capital costs of purchasing buses with lifts ranged from $8000 to $15,000 per bus, with the average for 10 large cities being $12,900. Although many systems do not keep maintenance records detailed enough to separate out charges attributable only to lift service, 7 cities reported that they spent just over $1400 per lift per year, on average, for maintenance. Seattle had the lowest costs, $585 per lift, and San Diego experienced the highest annual maintenance cost per lift, $2778.

The MTA estimated that purchasing lift-equipped buses would increase its budget by $2.2 million annually, representing a 36% increase in expenditures on services for the elderly and handicapped. The MTA found that it would need 715 wheelchair boardings per day to equal the amount of paratransit or specialized service the authority could provide to elderly and handicapped people for the same amount of money. To achieve that level of wheelchair use, Houston would have to experience ridership 2 to 3 times higher than the most successful cities in its survey.48

Two 1989—1990 studies found similar patterns; the cities surveyed represent

roughly 40% of all mid- and large-size American cities. Although all of the cities responding had special transit services, only one-half of the mid-size and one-third of the large cities surveyed had accessible fixed-route service. Table 21-5, presenting findings from these studies, shows that (1) many cities did not have accessible services and (2) those cities with accessible vehicles had very limited services.

**TABLE 21-5**
**Availability and Use of Accessible Transit in the United States**

| | Nineteen Mid-Size Citiesa (200,000-700,000 population) | | | Nine Large Citiesb (1.2-3.0 million population) | | |
|---|---|---|---|---|---|---|
| | Average | Highest | Lowest | Average | Highest | Lowest |
| Percentage of cities without any accessible service | 52.6% | — | — | 33.3% | — | — |
| Of those with any accessible service: | | | | | | |
| % of vehicle fleet accessible | 49.3 | 100% | 15.7% | 26.1% | 70.3% | 14.8% |
| % of routes accessible | 79.9% | 100% | 15.7% | 31.5% | 75.0% | 14.8% |
| Monthly r~dership (boardings) | 522 | 3300e | 2 | n.a. | n.a. | n.a. |

aAlbuquerque, Allentown, Austin, Bakersfield, Baton Rouge, Charlotte, Fresno, Grand Rapids, Greensboro, Harrisburg, Jacksonville, Knoxville, Las Vegas, Little Rock, New Haven, Orlando, Raleigh, Syracuse, Toledo, Tucson, Tulsa, and Youngstown. Albuquerque, Charlotte, and New Haven did not provide sufficient information to be included in most of the analyses reported on; they do not appear in the percentage totals.
bDallas, Ft.. Lauderdale, Houston, Miami, Milwaukee, Oklahoma City, Pittsburgh, San Diego, and Seattle. cRaleigh and Austin.
dSeattle.
eBakersfield.

Source: S. Rosenbloom, "Elderly and Handicapped Transit and Paratransit Services Across the U.S.: The Experience of Mid-Sized Cities," CRP Working Paper No. 022, Austin, Texas, 1990, and CRA Inc. and S. Rosenbloom, "National Survey of Paratransit Service Quality, Options, and Resources."

As Table 21-5 illustrates, only ten mid-size (or 52.6% of the sample) and three large cities (or 33.3% of the sample) had any level of accessible bus service, although five of the cities were in states that had mandated wheelchair-accessible bus purchases continuously for over 10 years. Table 21-5 also shows how low ridership was in all mid-size cities except Bakersfield (with 3300 boardings per month) Seattle was the only large city in this sample to have appreciable ridership (over 7000 boardings per month).

The cause of poor ridership is far from clear but probably represents a com

bination of system and nonsystem factors. Most of the transit operators in the sample did not offer much accessible service nor provide marketing or training programs aimed at handicapped travelers. The reliability of service delivery, which can drastically affect ridership, is open to question, given earlier study findings and the complaints of advocates. A host of environmental factors also could have affected ridership, from ice and snow in northern climates to inaccessible streets, stops, and buildings in all climates. Last, advocates argue that many systems undercount actual and attempted boardings by a factor of 2 or 3 to 1.

Another factor in the low utilization of accessible services in many cities may have been the inherent limitations of traditional transit services—accessible or not—in serving the increasingly suburbanized handicapped traveler. Few of the mid-size cities had more than a dozen routes in their network, suggesting that in low-density areas transit systems fail to offer much service to any patrons. Las Vegas, for example, serving almost 8000 mi2 (22,000 km2), had only 11 routes; on the other hand, Syracuse, a city with higher than average wheelchair boardings, had 91 routes in a 600-mi2 service area.

## SPECIAL TRANSIT SERVICES

In 1989 APTA reported that the majority of transit systems with accessible fixed-route services supplemented those efforts with specialized paratransit services; roughly 44% of all cities met their mandated responsibilities to the handicapped with special services alone. APTA also calculated that more than 70 million trips were provided by special transit services in 1987.

Two national studies undertaken separately by Tucson and Tulsa in 1989—1990 show that most special systems reach few of the people eligible for services and those people make few trips, suggesting that severe service limitations and restrictions partially explain the limited utilization by those in need.

### Usage Patterns and Target Group Penetration

Accessible fixed-route services and special services are targeting two different groups; the data show that the overwhelming majority of special system riders do not require level-changing devices, although they may need special features such as wider doors and aisles and lower entry steps or floors. On average, almost 60% of special system users in the 28 cities studied by Tucson and Tulsa were elderly; well over two-thirds of users were ambulatory, even in systems that required a handicap among the elderly for service eligibility. In over one-third of the cities, over 90% of users were ambulatory.

Table 21-6 shows that registrants in most cities constituted only a small percentage of those eligible for service. Moreover, these cities provided relatively few rides per eligible or registered population. Registration figures were fairly low; on average, mid-size cities had a little over 3000 registrants or roughly 18% of those eligible for service

(with the largest number of systems registering under 10%). Large cities, which tended to have far more restrictive eligibility criteria, registered about one in five eligible citizens. Strikingly, these registration numbers are probably overstated, even though low, because registration counts tend to be cumulative; few cities actively try to remove the names of nonusers or those who die or move. Pittsburgh reported 91,000 registrants, which is every person who registered since service inception in 1977!

TABLE 21-6
Penetration and usage of Special Systems

| | Nineteen Mid-Size Citiesa (200,000-700,000 population | | Nine Large Citiesb (1.2-3.0 million population) | | Most common |
|---|---|---|---|---|---|
| | Average | Most common Answer | Average | Answer | |
| Registrants as a % of eligible populationc | 17.5% | Under 10% | 21.9% | Under 20% | |
| Anual one-way trips per registrant | 43.8% | 20-30 | 34.9% | 20-30 | |
| Actived users as a % of eligible population | 3.1% | Under 2% | 15.8% | Under 10% | |
| Actived users as a % of registrants | 27.6% | Under 20% | 10.0% | Under 2% | |
| Annual one-way trips per active user | 204.5 | Under 200 | 293 | Under 200 | |
| A nnual one-way trips per capita (total population) | 4.7 | Under 3.0 | .38 | Under 3.1 | |

aSee Table 21-5.
bSee Table 21-5.
cThese figures were calculated based on each city's own eligibility criterion.
dUsing each city's definition of "active" which could be as little as once per year.

Source: S. Rosenbloom, "Elderly and Handicapped Transit and Paratransit Services Across the U.S.: The Experience of Mid-Sized Cities," CRP Working Paper No. 022, Austin, Texas, 1990, and CRA Inc. and S. Rosenbloom, "National Survey of Paratransit Service Quality, Options, and Resources."

Given the low registration figures, it is not surprising that these cities provided relatively few trips per registrant or eligible citizen. On average, mid-size cities provided fewer that 3 round trips per year to everyone eligible for service or 20 round trips per registrant.

Table 21-6 shows that most cities did not have many active riders, even using a remarkably lenient definition of "active." (Most cities classified people as active riders if they traveled once a month or more; three systems classified active riders as those that rode once a year.) In general, most mid-size cities had less that 10000 active users, representing, on average, slightly more than one-quarter or those registered for service.

More important, these active users generally represented only 3% (or less) of the total eligible population in the mid-size cities.

Almost all the large cities in the sample had less than 4000 active users, representing, on average, less than 10% of those registered for service (with the largest number of cities reporting that less than 2% of their registrants actively used services). Active users represented a higher percentage of those eligible for service in the larger cities—just under 16% on average—because larger cities had much stricter eligibility criteria. Overall, even active riders were not very active, making, on average, less than two round trips per week.

These findings square with unpublished data from the 1984 National Health Interview Survey, which found that only 19.2% of the seriously or severely handicapped elderly and only 4.6% of comparable younger adults had ever used special transportation services of any type. Moreover, a number of ridership studies in 1980 found that citizens who actually rode special services rarely made more than 40% of all their trips on these systems, with the average closer to 12%.

**Service Levels and Ridership**

Table 21-7 displays some of the key parameters of service that undoubtedly affect rider response, focusing on the specific restrictions that individual systems impose on users. First, not all the systems allow *all* the elderly to receive service. As the table shows, a little over one-half of the mid-size cities and two-thirds of the large cities require the elderly to have a physical or mental handicap that interferes with their ability to use fixed-route transit. (Seattle also requires low income; San Diego also requires the lack of an auto.) Note that being poor or sporadically disabled or even lacking a car—without a serious physical disability—does not meet minimum eligibility criteria in any of the sampled cities. Although disability requirements tend to be liberally interpreted in many communities, such systems technically offer no options to the elderly or disabled person who cannot use a bus in bad weather, but can otherwise, or who is afraid to travel at night, but not otherwise, or who wishes a respite (financial or emotional) from driving a car. Most systems also provide no option for those who could physically use transit but who live in areas without transit service.

Second, all the sample cities tend to restrict the days and times in which service is available. Over one-third of the mid-size cities and one-fifth of the large cities do not provide Sunday service; most provide only limited Saturday service. The mid-size cities have particularly restrictive weekday service, many providing only normal business-hour service: 7 or 8 a.m. to 5 or 6 p.m. (the study average is raised considerably by Raleigh, which uses taxi operators available 24 hours per day). Third, most cities provide only curb-to-curb service, although even ambulatory people may need assistance to and from the door.

Last, most systems require an advance reservation of at least 24 hours; five mid-size systems volunteered that, in reality, the formal requirement was not sufficient time to actually receive a trip. The city of Tucson requires a 3-day (72-hour) advance reservation.

TABLE **21-7**

**Special Service Restrictions and Parameters**

| | Nineteen Mid-Size Citiesa (200,000 700,000) | Nine Large Cities b (1.2-3.0 million) |
|---|---|---|
| Eligible for special services | | |
| All elderly plus all disabledC | 47.3% | 33.3% |
| Disabled only (all ages) | 52.7% | 44.5% |
| Disabled only plus other restrictions - | | 22.2% |
| Impose trip or user restrictions or priorities | 26.3% | 22.2% |
| Type of service | | |
| Curb-to-curb | 52.6% | 33.3% |
| Door-to-door | 31.6% | 66.7% |
| Both, varying with user | 15.8% | 0% |
| Service availability | | |
| Weekday hours (average) | 13.5hours | 18.0 hours |
| Saturday hoursd | 11.7 hours | 19.6 hours |
| Sunday hoursd | 11.4 hours | 19.0 hours |
| Weekday service only | 5.3% | 11.1% |
| No Sunday service | 36.8% | 22.2% |

aSee Table 21-5.
bSee Table 21-5.
cOne mid-size and two large cities define elderly as 70 and over; one large city, as 60 and over.
dOf those with service on that day.

Overall these systems impose a number of difficult restrictions on potential riders. The lack of evening and, in some cases, weekend service creates a serious constraint on a variety of social, recreational, and personal business trips. Such schedules also provide no option to the many elderly or disabled drivers who are unable to drive after dark or in poor weather. The limited hours of service, advance reservation requirements, and constrained service availability combine to reduce the usefulness of these systems to most people eligible for and genuinely in need of transportation assistance.

## Methods of Service Delivery

Transit systems have chosen a variety of ways to provide special services. While a majority of very small systems directly deliver services themselves,49 most cities over

200,000 contract with community providers for some or all the services they provide. Cities that contract generally purchase *dedicated services;* the contractor's drivers and vehicles are fully committed to special transit use during specified periods of the day and week. During the time purchased, the contractor may not serve additional clients or mix public riders with special service users. The system commonly pays the operator by the vehicle-hour, but can also pay by the vehicle-mile (or some combination of mile and hour charges) or by the one-way passenger trip.

A small number of systems have a *user-side subsidy* program, where the user rather than the provider receives the subsidy. Users are given a voucher or coupon with which they pay the participating provider of their choice, most commonly local taxi operators. User-side subsidy programs rarely involve dedicated services; taxi operators serve private clients at times when special service users do not request rides. This permits private operators to utilize their equipment more fully, generally increasing productivity and lowering costs.

The Tucson and Tulsa studies found that three-fourths of the mid-size city respondents contract for some or all special services, while the rest provide all special services themselves. One mid-size city, Raleigh, has a user-side subsidy program with local taxi companies. The majority of those contracting for service do so with private providers, although two mid-size cities contract with other governmental agencies. All of the large cities contract for some or all special services, with three also having user-side subsidy programs (Dallas, San Diego, and Seattle).

Almost two-thirds of the systems contracting for service leased their own vehicles to the contractor to lower costs. Many systems contracting for service delivery retained other aspects of service, generally in an attempt to increase efficiency. For example, most systems certified client eligibility themselves, while about one-third of the cities, in an attempt to redress low productivity, took an active role in scheduling or dispatching contractor vehicles (leased or not).

Low productivity is a common feature of special services. Several studies, including an analysis of a large number of Canadian services, indicate that productivity on special transportation systems (the number of passenger trips carried in an hour or per mile) is very low.50 The cities surveyed in 1989—1990 show similar patterns when their productivity is computed. The mid-size cities carried between a third of a passenger-trip per vehicle-hour to a high of almost five passenger-trips per hour. The average was less than 1.4 trips per vehicle-hour. Although the large-city average was higher (almost 2.4 trips per hour), it was brought up by just one city. Actually, over half of the large cities carried less than 1.5 passenger-trips per hour. To put this in perspective, only three of the mid-size and two of the large systems achieved productivity equal to or in excess of what an ordinary taxi operator routinely achieves.

**Cost Patterns**

In 1989, APTA reported that the average cost of a one-way special transit trip was $9.70; a 1986 study reported that the average cost per one-way trip for all Canadian special transit services was $10.05.51 The U.S. cities sampled in the two 1989-1990

TABLE **21-8**
**Unit Cost Patterns for Special Services**

| | Nineteen Mid-Size Cities.a (200,000 700,000 population) | | Nine Large Citiesb (1.2-3.0 million population) | |
|---|---|---|---|---|
| | Average | Most Common answer | Average | Most common answer |
| Reported costs | | | | |
| Per one-way passenger-trip | $8/63 | $6-$10 | $7/25 | $4-$7 |
| Per vehicle-hour | $11.50 | $9-$14 | n.a. | n.a. |
| Reconstructed costssc | | | | |
| Per one-way passenger-trip | $10.95 | $8-$11 | $7.75 | $7-$9 |
| Per vehicle-hour | $14.57 | $8-$10 | n.a. | n.a. |

aMid-size city costs were reconstructed using the method described in S. Rosenbloom, "Elderly and Handicapped Transit and Paratransit Services Across the U.S.: The Experience of Mid-Sized Cities," CRP Working paper No. 022, Austin, Texas, 1990.
bThe cost data for the nine large cities were obtained from CRA Inc. and S. Rosenbloom, "National Survey of Paratransit Service Quality, Options, and Resources."
cNot all system reported data could be reconstructed; these are the most common responses for the smaller number of respondents.

studies showed similar averages, with wide variations in individual responses. Table 21-8 presents the limited cost data received from respondents on their special services (over 40% of systems did not know all their costs). The costs obtained directly from the systems are shown as "reported costs." The reported costs per one-way passenger trip for mid-size cities ranged from a just over $3 to a little over $15; the average reported cost was $8.63, with almost half of the respondents falling between $4 and $7 a one-way trip. Reported costs among the large cities ranged from a low of $4.89 to a high of $11.47, with an average of $7.25 per one-way trip.

Since many special transit systems do not report or compute all their costs, Table 21-8 also shows *reconstructed* costs calculated by adding an estimate of "missing" expenses to reported costs. It shows that in mid-size cities reconstructed charges are roughly 27% higher than reported costs. The average cost per one-way trip in the mid-size city jumped to almost $11.00. Since big cities were more likely to report a greater percentage of their actual expenses, reported per-trip costs only increased 7% to $7.75.

Unfortunately, the system-wide cost averages obscure major differences in the cost patterns of different providers, particularly within the larger cities. Many of the larger and several mid-size cities had multiple providers; those providing service to ambulatory clients and taxi operators tended to incur costs far below the average. Operators providing services to those in wheelchairs or those requiring significant driver assistance incurred costs far above the average.

# SUMMARY

The elderly and handicapped are a significant and growing segment of the U.S. population, but one with a variety of transportation needs and preferences. Although only a small percentage of both groups currently reports serious mobility problems, the growth of the very old and the increasing numbers of active younger handicapped citizens will create severe mobility problems that transportation planners and transit systems must address. The response must match the actual travel needs and preferences of the elderly and handicapped—in all their diversity. The suburban and rural location of over two-thirds of this population and the overwhelming number of elderly and even handicapped travelers who are licensed drivers suggest that transportation planners will have to respond in the future in new and different ways.

There are a variety of reasons why services are largely unresponsive to the needs of the vast majority of these citizens. The low level of utilization of fixed-route and special systems may result from (1) the constrained way in which alternatives are currently provided, (2) the availability of superior travel options (like the private car), and/or (3) personal preferences and the desire to maintain independence and choice.

Both DOT and the DHHS, and the state and local agencies they fund, have failed to develop coherent or particularly useful responses to the transportation needs of elderly and handicapped travelers. Both agencies are hampered, of course, by lack of funding and the enormity of the problem, but other factors contribute significantly. DOT has been unable to respond successfully because it operates without clear information on the real mobility needs of the transportation handicapped and, as such, has focused on only the role of traditional transit service in serving the needs of these citizens. Without DOT leadership, it is unlikely that local transit systems will actively consider changes in traditional services or more appropriate ways to meet the needs of modern elderly or handicapped citizens. DOT has also been hampered by legislative vagaries. The Americans with Disabilities Act (ADA) will now require transportation operators to provide fully accessible transit—in the limited areas where they provide transit services at all—but this will undoubtedly be accompanied by declining special services for the majority of elderly and handicapped unable to use accessible transit. DOT is also handicapped by the failure of other social, medical, urban planning, and housing factors to take any responsibility for their part in creating transportation difficulties for their clients.

The many funding programs of the DHHS support a maze of individual transport systems instead of supporting the clients needing transportation. Although current federal policies call for the coordination of these resources, these efforts tend to have a narrow focus and limited success for several reasons First, Congress itself has questioned whether the DHHS and the AOA are making serious efforts to coordinate local transportation services; second, the elderly and subgroups of the handicapped have their own advocates who argue for separate programs at the federal and local level. Few of the human or social agencies whose nontransportation services are funded by the DHHS (or other federal, state, and local programs) accept the need to consider alternatives to current service delivery methods, which increase the need for the elderly and handicapped to travel long distances.

In short, the overwhelming number of elderly and handicapped travelers have few meaningful options if or when they cannot drive, find rides, pay full-fare taxis, or use available transit.

## CONCLUSIONS AND POLICY IMPLICATIONS

We must develop a repertoire of transportation and nontransportation alternatives that provide mobility for elderly and disabled individuals in ways that they find acceptable and will use. Among the following suggestions, the first five must involve a range of actors and agencies; the last set of suggestions must be the responsibility of local transit operators.

First, since transportation needs are so linked to land-use patterns, we must involve land-use policy makers in the process of making the city more accessible to all travelers. (See also Chap. 25.) As suburbs become the home of increasing concentrations of disabled and elderly citizens, we have to rethink traditional zoning codes that limit nonresidential uses. These limitations force the elderly and handicapped to travel beyond walking distances to needed services and decrease their mobility as their driving skills decrease. We also have to encourage land-use planners to make suburban areas more responsive to the elderly or disabled pedestrian. Pedestrian improvements will facilitate some additional use of accessible fixed-route transit, slightly reduce the demand for motorized transportation (especially if undertaken with meaningful land-use changes), and meet some of the recreational and exercise needs of all citizens.

Second, since transportation needs are clearly linked to where and how human and social services are made available, social agency planners must recognize the changing demographics of the elderly and handicapped population and locate and program their services accordingly. Social and human service agencies must think carefully about the actual location of their facilities; social planners should not locate inaccessible facilities and then demand that transportation planners deal with the resulting loss of mobility. Moreover, social planners must rethink the ways in which their services are provided Given the serious transportation problems facing the elderly and handicapped, providers may have to bring the services to the client rather than requiring the client to travel to them. Agencies may have to offer service vouchers or reimbursement allowing clients to use services near their home, rather than having to travel to prescribed and limited locations.

Third, communities must develop a range of transportation options that may not directly involve transit operators. Since so many elderly and handicapped people drive or rely on others to drive them, government and private agencies must develop new programs and strengthen existing programs that keep competent drivers in their cars as long as possible. Communities must offer driver training and retraining courses on a much larger scale, develop—and help finance if necessary—more sophisticated physical modifications to passenger cars or vans to facilitate driving by a wider range

of disabled citizens, and offer financial support or incentives to competent drivers with low incomes who require assistance in maintaining or insuring a car.

Allied to programs that enable elderly or handicapped people to begin or continue driving, the government must strengthen ridesharing networks. Many elderly are given rides by other drivers, so paid and unpaid carpooling should be strengthened. In rural areas, programs that develop reasonable ways to pay drivers to carry elderly and handicapped people may have more impact than the limited Section 18 rural transit program.

Fourth, we must develop stronger state-level mandatory coordination requirements for agencies receiving federal or state transportation grants to ensure that the limited funds available for transportation for the elderly and handicapped are spent in the most costeffective ways. These requirements should, at a minimum, refuse vehicles or operating expenses to individual agencies unless they can prove that existing community operators cannot provide cheaper transportation service to their clients. A more comprehensive coordination strategy would set up regional brokers or coordinators to address the excess capacity of existing systems while preventing the formation of new ones.

Fifth, communities should try to involve existing providers in the delivery of services to elderly and handicapped travelers. For example, communities could work with local private operators to develop reduced-fare traditional taxi programs, since many citizens require the service characteristics of the car but cannot pay full taxi or lift- equipped service fees. Analysts have argued that simply by "block-purchasing" trips a community could reduce taxi fares by at least 20% without any appreciable public subsidy. The community could offer subsidized taxi vouchers to those still unable to afford reduced-fare regular taxis. In the spirit of the mandatory coordination requirements previously suggested, communities could pay for those subsidies by combining transit funds with DHHS and other agency funds. Such user-side subsidy programs should be the responsibility not just of transit operators, who could pay only a small part of the total costs, but of all the agencies in a community receiving funds to meet the travel needs of the elderly and handicapped.

Finally, there is a set of options for which transit systems must accept major responsibility. First, transit systems must make good faith efforts to provide reliable accessible services. The paradox of accessible services is that, although few people use it even when fleets are fully accessible, existing investments will not be used to their full if limited potential until the fleet is substantially lift equipped. Several major cities have achieved thousands of monthly boardings by providing reliable service, by carefully deploying accessible buses to routes of heaviest demand by the handicapped, and by developing marketing and training programs.

Second, transit systems must identify and implement more marginal changes that will facilitate ridership by the elderly and handicapped. The debate over wheelchair lifts has obscured the other travel and service needs of the transportation disadvantaged. The internal configuration of buses and rapid transit vehicles is very important to many travelers: the width of the aisles, the placement of fare collection equipment and poles and straps, the texture of flooring, and so on. Many citizens need different or

additional scheduling information such as maps and signs in braille and audible bus stops. Safety and security is very important to many vulnerable travelers; systems may have to inaugurate additional patrols or on-vehicle protection. These changes may not appreciably increase ridership, but they will make transit use easier and less traumatic for elderly and handicapped clients.

Third, transit operators must also recognize the changing demographics of the population. They must reorient and reroute their traditional transit services in and near concentrations of elderly and disabled travelers. Several European countries have pioneered a concept that might have widespread use here. In Sweden and England, *service routes,* offering traditional transit services specifically designed to access the origins and destinations of the elderly, have been enormously successful. The Swedish service routes have been so successful that many communities experienced a 50% drop in special service ridership and are so cost effective that many cities have foregone the federal subsidy currently available only for special services for the elderly and handicapped.

Last, transit systems must continue to offer special services, but only to those who are so handicapped that they cannot use accessible buses, low-fare or subsidized taxis, service routes, or ridesharing options. Even with these limitations, transit operators must be given additional financial assistance to expand and improve these special systems so they can offer reasonable transportation alternatives without the severe operational, scheduling, and trip constraints that special services impose.

Our society can only hope to meet the mobility needs of the elderly and the handicapped if all relevant agencies and actors become involved in the process. We must recognize how interrelated with transportation are all the systems in a community and develop a range of options, each focused on different needs within the increasingly heterogeneous groups of disabled and elderly travelers.

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## EXERCISES

21-1 Are there groups in society, besides the elderly and handicapped, with special transportation needs? Who? How are their needs different from the average traveler?

21-2 Why has the use of special services by eligible elderly and handicapped people been so low? Would you use such services instead of driving or riding with a friend? If so, under what circumstances?

21-3 If you were asked to design a service route for the elderly in your community, how would you go about it? What information would you need? Where do you think you could get that information?

21-4 How do you think the travel patterns of the elderly of the 1950s and the elderly of the 1990s differ? What causes the differences? Do you think that there have been comparable changes over 40 years in the makeup of the disabled population?

21-5 The elderly and the handicapped are often lumped together in the same category, yet they may have very different needs and travel patterns. In what ways do the travel patterns of those under 65 with a disability and those over 65 without disability differ, and what are the implications for transportation planners?

21-6 The elderly use transit systems far more frequently in European countries. Why? What improvements or changes would make traditional fixed-route services more responsive to the needs of the elderly? Consider improvements in all aspects of service.

21-7 What kind of land-use changes would reduce the dependence on the private auto by the elderly or handicapped? Why do you think that such changes have not been made?

21-8 How could social service agencies with disabled and elderly clients provide services in ways that reduced the need of these clients to travel? Would such alternatives be cost effective?

21-9 If you were asked to design a coordination mechanism for your community, bringing together all the transportation systems funded by the DHHS and DOT, how would you structure that strategy? What incentives could you create to encourage small providers to participate? What kind of sanctions could you create if they did not participate?

21-10 How could you set up a ridesharing program for the elderly and handicapped in rural areas? What problems would you have to address? What resources might be available to help you?